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THE
ONTARIO WATER RESOURCES
COMMISSION

WATER POLLUTION SURVEY

of the

VILLAGE OF PORT CARLING

DISTRICT OF MUSKOKA

1966

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VILLAGE OF PORT CARLING
1966
DISTRICT OF MUSKOKA

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1966

Report on a water pollution
survey of the village of Port
Carling, district of Muskoka.

80298

Report

on a

Water Pollution Survey

of the

VILLAGE OF PORT CARLING

District of Muskoka

December, 1966

Division of Sanitary Engineering

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R E P O R T

THE ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

A water pollution survey was conducted in the Village of Port Carling on July 7, 1966. The purpose of the survey was to locate and record all significant sources of water pollution within the village. Such surveys are performed routinely, and upon request, by the Ontario Water Resources Commission as a basis for evaluating all existing and potential sources of pollution. Where sources of pollution are found, corrective action is requested by the Commission. When water and/or pollution control appear desirable or expansions to present facilities are necessary, the Commission has a programme to aid in the construction and financing of these works.

The information received from village officials is gratefully acknowledged.

I GENERAL INFORMATION

The Village of Port Carling with a 1965 assessed population of 547 (1966 Municipal Directory) is located in the District of Muskoka, 130 miles north of Toronto.

The village, situated between Lakes Muskoka and Rosseau on the Indian River, is known as "The Hub of the Lakes" catering to many vacationers in the summer and winter seasons. The population increases in the summer to approximately 2,500 due to the fact that Port Carling serves as a main tourist trade point and is the main

docking point between Lakes Muskoka and Rosseau. Two boat locks are provided.

Outcroppings of bedrock are predominant in the area with some stoney till overburden. Surface drainage at Port Carling is provided by open ditches and storm sewers which outfall to the Indian River.

II WATER USES

1. Municipal Water System

Water for the Village of Port Carling is supplied by the municipal water works. Water from the Indian River flows by gravity to a wet well of 5,400 gallons capacity at which point it is pumped continuously via a pressure tank to the distribution system. Chlorination is applied as the water enters the distribution system which consists of 201 domestic and 19 commercial establishments. Since the water supply is not metered, exact water consumption figures are not available. The service pump is rated at 100 gpm and reportedly summer water consumption is four times that of the winter.

2. Private Water Systems

It is estimated that there are over 300 non-permanent dwellings in the Village of Port Carling. The majority of these residences are cottages in which water for domestic purposes is pumped from Indian River or Lakes Rosseau or Muskoka.

Canadian Keswick Conference - The Canadian Keswick Conference is located in Port Carling on the shore of Lake Rosseau and is in

active operation during the summer resort season catering to Missionary conferences. Water for domestic purposes is obtained from Lake Rosseau, chlorinated and pumped to two elevated tanks providing storage and pressure on the distribution system. The capacity of these tanks is approximately 14,300 gallons. In an OWRC report of July 28, 1965, it was estimated that the daily water consumption was 25,000 gallons.

3. Recreational

The surrounding lakes and rivers in the vicinity of the Village of Port Carling offer many water recreational facilities to summer vacationers such as boating, swimming, and fishing.

III WATER POLLUTION

1. Sanitary Waste Disposal

(a) Existing Conditions - There is no municipal sanitary sewerage system in Port Carling. Septic-tank and tile-bed systems are employed extensively. In some cases, one septic-tank system serves a number of residences. In the central part of the village, these systems are inadequate as small lot sizes have necessitated their location close to the Indian River.

The varying level of the land and bedrock outcroppings further limits the availability of land for tile-bed systems.

(b) Proposed Water Pollution Control Facilities - The Village of Port Carling has requested the Commission to develop a sewage works programme under the new Provincial method of financing.

The sewage works that may be applicable to the village would include major connection facilities to the treatment works, the treatment works and an outfall sewer. Under this program the municipality retains responsibility for the development of the internal sewage collection system which connects to the major trunk and treatment works.

In consideration of the design requirements for the sewage treatment works, it is realized that special care will need to be taken to protect Lake Muskoka during the summer recreational period and provide service for the variable population that would use the systems.

(c) Canadian Keswick Conference - A waste stabilization pond with seasonal retention serves this summer resort.

2. Discussion of Water Quality

The observations and analytical data on samples taken from drainage systems and the Indian River are contained in Tables I, II and III. A description of the significance of the laboratory tests and water quality objectives are also appended.

The data on bacterial quality of the Indian River and its tributaries shows progressive change as the river advances through the built-up section of the village. Previous data on the river (see OWRC report on Water Quality and Pollution Control in the Muskoka Lakes 1966) confirmed the variability of its quality at Port Carling. Although the coliform levels were not excessive at the time of this

sampling the presence of increasing fecal pollution was indicated. These conditions are undoubtedly related to the influence of sewage disposal systems located along the banks of the river and vary from time to time with local water-use practices and the flow regime in the drainage basin.

Some paper and other debris was noticed in the water at the Department of Public Works locks. With the OWRC Regulation controlling waste discharges from boats, it is anticipated that problems of this nature will be eliminated thereby vastly improving the quality of Ontario waters. A brief explanation of this Regulation is given under the heading of "Boat Wastes" in this report.

3. Boat Wastes

A Regulation providing for the control of the discharge of sewage in pleasure boats and from pleasure boats into any water in Ontario has been made and approved under The Ontario Water Resources Commission Act and applies to any boat in Ontario waters including those from other parts of Canada and the United States. This Regulation provides that any pleasure boat that has sleeping accommodations, while in the water, must be equipped with a marine toilet and an approved device which will store or dispose of human sewage. The discharge of such sewage in these pleasure boats and the installation of the toilet and the approved device are also controlled by the Regulation to insure that the sewage is prevented from entering any water.

In addition, owners or operators of all pleasure boats must

insure that the boat, while in the water, is equipped with containers suitable for the storage of sewage that is not of human origin and that sewage is retained on board in these containers until such time as it can be lawfully discharged or deposited ashore.

It is anticipated that as a result of the passing of the Regulation a network of dockside pumping and shore disposal systems will be established at marinas and government docks to service the holding facilities of the various craft.

IV REFUSE DISPOSAL

The municipal refuse disposal site is located on Lot 30, Concession 5, in the Township of Medora and Wood within the Village of Port Carling. A burn and cover type of operation is employed at the site and no water pollution problems exist as a result.

V SUMMARY AND CONCLUSIONS

A municipal water pollution survey was made of the Village of Port Carling on July 7, 1966.

The Village of Port Carling has a municipal water works but no sewerage system. Private septic-tank systems are used predominantly in the village. Many of the systems in the central part of the village are inadequate as the lot sizes are too small and tile beds are located on sloping areas near the Indian River.

The Village of Port Carling has requested the Commission to develop a sewage works program under the new Provincial scheme and work on the project is proceeding. The municipality should continue with

its plan for the development of street sewers and laterals that would connect with the major sewerage and treatment facilities.

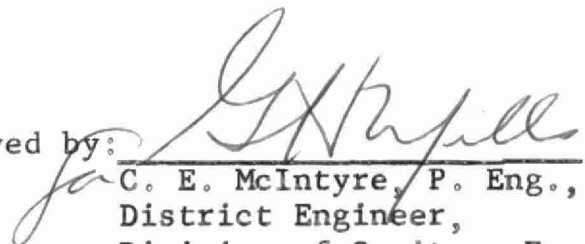
The results of the survey concluded that there was an increase of fecal pollution as the river advanced through the more populated areas of the village. This confirms the need for adequate sewage disposal facilities.

VI RECOMMENDATIONS

1. The Village of Port Carling should continue with its program to provide sewage service in the municipality.

2. The village should encourage boat owners and operators to use the public washrooms and refuse disposal facilities in the municipality.

Approved by:


C. E. McIntyre, P. Eng.,
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/elc
Prepared by:
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APPENDIX

WATER QUALITY AND EFFLUENT OBJECTIVES

The OWRC objectives for surface waters in Ontario are as follows:

5-Day BOD - not greater than 4 ppm
Total Coliform Count - not greater than 2,400 coliforms
per 100 c.c.
Phenolic Equivalents - average - not greater than 2 ppb
maximum - not greater than 5 ppb
pH Range - 6.7 to 8.5

A few pertinent maximum limits of contaminants in storm sewers, sewage treatment plant and industrial waste effluents are listed below. Adequate protection for surface waters except in certain specific instances influenced by local conditions, should be provided if the concentrations and pH range are not exceeded.

5-Day BOD - not greater than 15 ppm
Suspended Solids - not greater than 15 ppm
Phenols - not greater than 15 ppm
pH - 5.5 to 10.6
Iron - not greater than 15 ppm
Ether Solubles (oil) - not greater than 15 ppm

GLOSSARY OF TERMS

Bacteriological Examinations - The Most Probable Number technique is used by the Ontario Department of Health to obtain an approximation of the actual number of coliform organisms present. These organisms are the normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in untreated sewage and are, in general, relatively few in number in other stream pollutants.

Biochemical Oxygen Demand (BOD) - The biochemical oxygen demand test indicates the amount of oxygen required for stabilization of the decomposable organic matter found in sewage, sewage effluent, polluted waters, or industrial wastes, by aerobic biochemical action. The time and temperature used are five (5) days and 20°C, respectively.

Solids - The analyses for solids include tests for total, suspended, and dissolved solids. The total solids is a measure of the solids in solution and in suspension. Suspended solids indicate the measure of undissolved solids of organic or inorganic nature whereas the dissolved solids are a measure of those solids in solution.

Oils and Ether Soluble Materials - These include oils and all other ether soluble materials such as tarry substances and greases. The presence of these pollutants renders water difficult and sometimes impractical to treat, either for industrial or domestic use. Oils make streams unsightly and water unfit for bathing.

Phenolic Compounds - Phenols react with chlorine to produce intensely aromatic compounds. These compounds, even when highly diluted, may give a taste and odour to the water which is variously described as medicinal, chemical, or iodoform. Phenols taint fish and are toxic to fish, depending on the concentration. Normal water contains no phenolic compounds

TABLE I

[illegible]

VILLAGE OF PORT CARLING

STREAM AND OUTFALL SAMPLING

TABLE II

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	S O L I D S			PHENOLS IN (PPB)	ETHER SOLUBLES	MPN	
				TOTAL (PPM)	SUSP. (PPM)	DISS. (PPM)			TOTAL COLIFORM ORG./100 C.C.	E. COLI PER 100 C.C.
MI-34.58 W	STORM SEWER.	JUL. 7/66	NO FLOW NOTED							
MI-34.55	INDIAN RIVER.	JUL. 7/66							75	23
MI-34.47	INDIAN RIVER AT ONT. DEPT. OF PUBLIC WORKS LOCKS FOR SMALL BOATS.	JUL. 7/66	0.2				0	0	23	0
MI-34.47 W	STORM SEWER.	JUL. 7/66	NO FLOW NOTED							
MI-34.46	INDIAN RIVER.	JUL. 7/66							430	23
MI-34.40	INDIAN RIVER AT ONT. DEPT. OF PUBLIC WORKS MAIN LOCKS.	JUL. 7/66.	0.2	38	4	34	0	0	930	23
MI-34.40	STORM SEWER.	JUL. 7/66	NO FLOW NOTED							
MI-34.36	INDIAN RIVER AT REAR OF DUKE'S MARINA	JUL. 7/66	0.9	56	1	55	0	0	2,300	0
MI-34.31	INDIAN RIVER AT REAR OF LAKEVIEW RESTAURANT.	JUL. 7/66	0.8	72	1	71	0	1.0	430	23

TABLE II (CONT'D)

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	TOTAL (PPM)	SOLIDS		DISS. (PPM)	PHENOLS IN (PPB)	ETHER SOLUBLES	MPN	
					SUSP. (PPM)					TOTAL COLIFORM	E. COLI
										ORG./100 C.C.	PER 100 C.C.
M1-34.31 W	STORM SEWER.	JUL. 7/66	No FLOW NOTED								
M1-34.31 D	DRAINAGE DITCH FROM FERNDAL ROAD.	JUL. 7/66	1.0	252	11		241			930	930

VILLAGE OF PORT CARLING

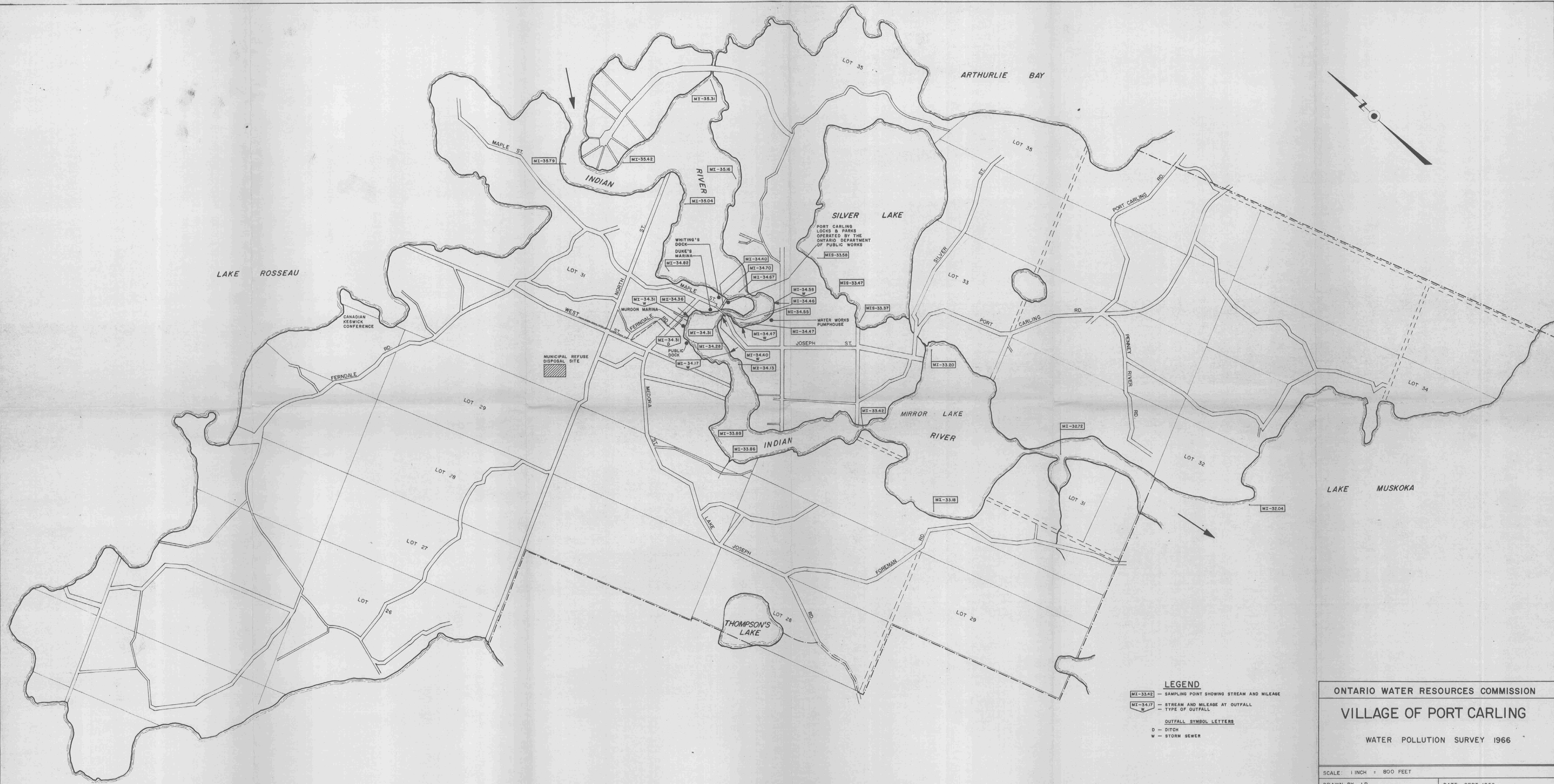
STREAM AND OUTFALL SAMPLING

TABLE III

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS		DISS. (PPM)	HARDNESS AS CaCO ₃ (PPM)	ALKALINITY AS CaCO ₃ (PPM)	PH AT LAB	IRON AS FE (PPM)	CHLORIDE AS CL (PPM)	MPN	
				TOTAL (PPM)	SUSP. (PPM)							TOTAL COLIFORM ORG./100 C.C.	E. COLI PER 100 C.C.
M-34.28	INDIAN RIVER 100 FT. OFF- SHORE FROM PUBLIC DOCK.	JUL. 7/66										9,300	0
M-34.17 W	STORM SEWER	JUL. 7/66	NO FLOW NOTED										
M-34.13	INDIAN RIVER	JUL. 7/66										43	23
M-33.89	INDIAN RIVER	JUL. 7/66										210	23
M-33.86	INDIAN RIVER	JUL. 7/66										39	0
M-33.42	INDIAN RIVER	JUL. 7/66										230	0
M-33.20	INDIAN RIVER	JUL. 7/66										150	150
MIS-33.37	SILVER LAKE	JUL. 7/66										9	0
MIS-33.47	SILVER LAKE	JUL. 7/66	0.5	34	1	33			7.8	0.11	3	4	0

TABLE III (CONT'D)

SAMPLING POINT NO.	DESCRIPTION	DATE	5-DAY BOD (PPM)	SOLIDS		DISS. (PPM)	HARDNESS AS CaCO ₃ (PPM)	ALKALINITY AS CaCO ₃ (PPM)	PH AT LAB	IRON AS FE (PPM)	CHLORIDE AS CL (PPM)	MPN	
				TOTAL (PPM)	SUSP. (PPM)							TOTAL COLIFORM ORG./100 C.C.	E. COLI PER 100 C.C.
MIS-33,58	SILVER LAKE	JUL. 7/66										0	0
MI-33,18	INDIAN RIVER	JUL. 7/66										43	0
MI-32,72	INDIAN RIVER	JUL. 7/66										4	0
MI-32,04	INDIAN RIVER AT LAKE MUSKOKA	JUL. 7/66	0.3	64	4	60	14	8	7.9	0.10	2	9	0



LEGEND

MI-33.42 — SAMPLING POINT SHOWING STREAM AND MILEAGE
MI-34.17 — STREAM AND MILEAGE AT OUTFALL
W — TYPE OF OUTFALL

OUTFALL SYMBOL LETTERS

D — DITCH
W — STORM SEWER

ONTARIO WATER RESOURCES COMMISSION	
VILLAGE OF PORT CARLING	
WATER POLLUTION SURVEY 1966	
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CHECKED BY:	DRAWING NO 62-88